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REMARKS

Claims 1-22, and 48-58 are pending. Claims 1, 3, 50-52, 55, and 58 are amended herein. No new matter has been added by these amendments, support therefore being found throughout the application as filed (e.g. see original claims and [0043]).

1. 35 U.S.C. §112 Rejections

Claims 1, 3-12, 14, 16-22, and 48-57 are rejected under 35 U.S.C. §112, first paragraph.

The Office asserts that “difunctional surface-modifying molecule defined as a molecule comprising a hydrophobic portion and a hydrophilic portion which has at least two cross-linking active groups” is critical or essential to the practice of the invention, but not included in the claim(s). Is not enabled by the disclosure”.

While not agreeing with this rejection, Applicants have amended claim 1 to include the recitation of at least two crosslinking active groups. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 4 and 6 are rejected under 35 U.S.C. §112, second paragraph.

The Office asserts that claims 4 and 6 “are in conflict with claim 1 because polyethylene glycol diacrylate is not capable of a significant *preferential* absorption on a substrate as shown in the present specification although it is actually a difunctional acrylate molecule having hydrophobic alkyl portion”.

Applicants respectfully disagree. When polyethylene glycol diacrylate (PEGDA) monomer is provided, the mixture forms a monolayer on the porous hydrophobic substrate. The monolayer features anchors to the substrate from preferential association with PEGDA's hydrophobic alkyl portions. These non-covalent hydrophobic interactions are pervasive over the entirety of the porous substrate. Thus, PEGDA does, in fact, provide significant preferential absorption on a substrate in accordance with the present invention.

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Accordingly, reconsideration and withdrawal of the rejections is respectfully requested.

2. 35 U.S.C. 102/103 Rejections

Callahan

Claims 1-19, 21, 22, 48-52, and 55-58 are rejected under 35 U.S.C. 102(b) or, alternatively, under 35 U.S.C. 103(a) over Callahan et al (US 4,976,897). Applicants respectfully traverse.

In particular, the Office asserts that Callahan's "diacrylate ester of bisphenyl A epoxy resin (table 1) reads on Applicants' difunctional surface modifying molecule".

Applicants respectfully traverse and resubmit all of their previous remarks in connection with Callahan.

Further, Example 1, which is used in connection with the resins of Table 1 (Table 1 setting forth the diacrylate ester of bisphenyl A epoxy resin pointed to by the Office) is provided to demonstrate the effect of viscosity of the UV curable resin on producing a suitable composite membrane. In particular, Callahan concludes that very high viscosity materials (such as Celrad 3700 and Celrad 3700-20T having viscosities greater than 70,000 cp) are used to produce suitable composite membranes because these high viscosity resins allow curing without pore penetration.

Thus, it is respectfully submitted that claims 1, 50-52, 55, and 58 are patentable over Callahan. Claims 2-22, 48-49, 53-54, and 56-57 depend from claims, 1, 50-52, 55, and 58 and, thus, also are patentable over Callahan. Reconsideration and withdrawal of the rejection is respectfully requested.

Callahan and Steuck

Claim 20 is rejected under 35 U.S.C. 103(a) over Callahan and Steuck et al (US 4,618,533). Applicants respectfully traverse.

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As set forth above, Callahan at least does not teach or suggest a composite porous membrane comprising a hydrophobic substrate coated with difunctional surface-modifying molecules, wherein the surface-modifying molecules are polymerized and crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network consisting of the difunctional surface-modifying molecules at the surface of the membrane.

Steuck is cited for the asserted use of polyethylene and polyvinylidene fluoride porous membranes. However, Steuck, in combination with Callahan still would not remedy the above-noted deficiencies.

Accordingly, claim 1 is patentable over Callahan and Steuck. Claim 20 depends from claim 1 and, thus, also is patentable over Callahan and Steuck. Reconsideration and withdrawal of the rejection is respectfully requested.

Witham

Claims 1-19, 12-17, 19, 21, 22, and 48-58 are rejected under 35 U.S.C. 102(b) or, alternatively, under 35 U.S.C. 103(a) over Witham et al (US 6,193,077).

To expedite prosecution, Applicants have amended the claims to incorporate that the crosslinked hydrophilic polymeric network consists of difunctional surface-modifying molecules, as proposed by the Office.

Thus, it is respectfully submitted that claims 1, 50-52, 55, and 58 are patentable over Witham. Claims 2-22, 48-49, 53-54, and 56-57 depend from claims, 1, 50-52, 55, and 58 and, thus, also are patentable over Witham. Reconsideration and withdrawal of the rejection is respectfully requested.

Witham and Steuck

Claim 20 is rejected under 35 U.S.C. 103(a) over Witham and Steuck. Applicants respectfully traverse.

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Steuck is cited for the use of polyethylene and polyvinylidene fluoride porous membranes. However, Steuck, in combination with Witham still would not remedy the above-noted deficiencies of Witham.

Accordingly, claim 1 is patentable over Witham and Steuck. Claim 20 depends from claim 1 and, thus, also is patentable over Witham and Steuck. Reconsideration and withdrawal of the rejection is respectfully requested.

Witham and Hu

Claim 18 is rejected under 35 U.S.C. 103(a) over Witham and Hu et al (US 5,209,849). Applicants respectfully traverse.

Hu is cited for the use of DROCUR[®] 1173 as a photoinitiator. However, Witham is specifically directed to the plasma polymerization rather than UV treatment so as to provide benefits not believed to be available using UV treatment (see e.g. col. 2, lines 8-59). Further, Hu in combination with Witham still would not remedy the above-noted deficiencies of Witham.

Accordingly, claim 1 is patentable over Witham and Hu. Claim 18 depends from claim 1 and, thus, also is patentable over Witham and Hu. Reconsideration and withdrawal of the rejection is respectfully requested.

Witham and Wu

Claim 10 is rejected under 35 U.S.C. 103(a) over Witham and Wu et al (WO 00/50161). Applicants respectfully traverse.

Wu is cited for the asserted use of crosslinked acrylic coatings having a pendant cationic group linked to the backbone of the coating. However, Wu in combination with Witham still would not remedy the above-noted deficiencies of Witham.

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Accordingly, claim 1 is patentable over Witham and Wu. Claim 10 depends from claim 1 and, thus, also is patentable over Witham and Wu. Reconsideration and withdrawal of the rejection is respectfully requested.

Witham and Hou

Claim 11 is rejected under 35 U.S.C. 103(a) over Witham and Hou et al. (WO 00/50160). Applicants respectfully traverse.

Hou is cited for the asserted use of cross-linked acrylic coatings having fixed negative charge. However, Hou in combination with Witham still would not remedy the above-noted deficiencies of Witham.

Accordingly, claim 1 is patentable over Witham and Hou. Claim 11 depends from claim 1 and, thus, also is patentable over Witham and Hou. Reconsideration and withdrawal of the rejection is respectfully requested.

Charkoudian et al.

Claims 1-3, 5-7, 9, 12, 14, 16-22, and 48-57 are rejected under 35 U.S.C. §102(e) under 35 U.S.C. §102(e) or 35 U.S.C. §103(a) over U.S. Patent Publication No. 2003/0077435 to Charkoudian et al. (hereinafter "Charkoudian"). Applicants respectfully traverse.

Applicants recite a composite porous membrane comprising a hydrophobic substrate coated with difunctional surface-modifying molecules, wherein the surface-modifying molecules are polymerized and crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network consisting of the difunctional surface-modifying molecules at the surface of the membrane.

Charkoudian, on the other hand, describes membranes having a crosslinked ter-polymer surface.

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Accordingly, it is respectfully submitted that claims 1, 50-52, 55, and 58 are patentable over Charkoudian. Claims 2-3, 5-7, 9, 12, 14, 16-22, 48, 49, and 53-57 depend from claims 1, 50-52, 55, and 58 and thus, also are patentable over Charkoudian. Reconsideration and withdrawal of the rejection is respectfully requested.

Charkoudian and Wu

Claim 10 is rejected under 35 U.S.C. §103(a) over Charkoudian and Wu. Applicants respectfully traverse.

As set forth above, Charkoudian at least does not teach or suggest a composite porous membrane comprising a hydrophobic substrate coated with difunctional surface-modifying molecules, wherein the surface-modifying molecules are polymerized and crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network consisting of the difunctional surface-modifying molecules at the surface of the membrane.

Wu is cited for the asserted use of crosslinked acrylic coatings having a pendant cationic group linked to the backbone of the coating. However, Wu in combination with Charkoudian still would not remedy the above-noted deficiencies of Charkoudian.

Accordingly, claim 1 is patentable over Charkoudian and Wu. Claim 10 depends from claim 1 and, thus, also is patentable over Charkoudian and Wu. Reconsideration and withdrawal of the rejection is respectfully requested.

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Charkoudian and Hou

Claim 11 is rejected under 35 U.S.C. §103(a) over Charkoudian and Hou. Applicants respectfully traverse.

As set forth above, Charkoudian at least does not teach or suggest a composite porous membrane comprising a hydrophobic substrate coated with difunctional surface-modifying molecules, wherein the surface-modifying molecules are polymerized and crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network consisting of the difunctional surface-modifying molecules at the surface of the membrane.

Hou is cited for the asserted use of cross-linked acrylic coatings having fixed negative charge. However, Hou in combination with Charkoudian still would not remedy the above-noted deficiencies of Charkoudian.

Accordingly, claim 1 is patentable over Charkoudian and Hou. Claim 11 depends from claim 1 and, thus, also is patentable over Charkoudian and Hou. Reconsideration and withdrawal of the rejection is respectfully requested.

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CONCLUSION

In view of the foregoing, Applicants request reconsideration and allowance of claims 1-22 and 48-58.

It is believed that no fees are required for consideration of this response. However, if for any reason the fee paid is inadequate or credit is owed for any excess fee paid, the Office is hereby authorized and requested to charge Deposit Account No. 04-1105.

Respectfully submitted,

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